If $a, b, c > 0, \ n \in N$ then:

$$\sum \frac{b+c}{a^n} \geq \frac{6(a+b+c)}{a^n + c^n + b^n}$$

Proposed by Marin Chirciu-Romania

Solution by Tapas Das-India

$$WLOG \ a \geq b \geq c \ \ then: \ \ (a+b) \geq (a+c) \geq (b+c), \quad \frac{1}{a^n} \leq \frac{1}{b^n} \leq \frac{1}{c^n}$$

$$\sum \frac{b+c}{a^n} \overset{Chebyshev}{\geq} \frac{1}{3}\left(\sum b + c\right)\left(\sum \frac{1}{a^n}\right) \overset{Bergstrom}{\geq}$$

$$\geq \frac{2}{3}(a+b+c)\frac{(1+1+1)^2}{a^n + b^n + c^n} = \frac{6(a+b+c)}{a^n + c^n + b^n}$$

$$Equality \ holds \ for \ a = b = c = 1$$